

**REMARKS**

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1, 7, 11, 17, 21 and 27 are currently being amended.

This amendment adds, changes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-11, 13-21 and 23-30 are now pending in this application with claims 8, 9, 18, 19, 28 and 29 being withdrawn.

**Claim Rejections under 35 U.S.C. § 101 Non-Statutory Subject Matter**

Claims 11, 13-17 and 20 were rejected under 35 U.S.C. §101 for allegedly being directed to non-statutory subject matter. In support of the rejection, the Office Action relies on the machine-or-transformation test. Please note that the Federal Circuit *Bilski* case cited in the Office Action was heard and modified by the Supreme Court. The machine-or-transformation test is not the exclusive test for patentability, nor must a claim pass the test to be directed toward patentable subject matter. *See Bilski*, 130 S.Ct. at 3227. Instead the eligibility requirement must focus on the language of § 101 and the Supreme Court's holdings in *Diehr*, *Benson*, and *Flook*. That is, the key question to determining patentability is whether the claim is directed toward an abstract idea. *See Ultramercial*, 2010 WL 3360098 at \*3-\*6.

Applicant submits that claims 11 and 13-17 are not directed to abstract ideas and are therefore patentable. In *Diehr*, the Court upheld the patentability of a computerized process that used a mathematical formula. Here, claims 11 and 13-17 are directed to a computerized method for screening for a ligand that binds to a protein. The Supreme Court found the claim at issue in *Bilski* (a method of managing the risk of bad weather through commodities trading) to be ineligible in part because the method would "pre-empt use of this approach in all fields." 130 S.Ct. at 3231. In contrast, the claimed screening method does not pre-empt use in all fields. Instead, the claims are directed to a particular application of screening for a

ligand that binds to a protein. Accordingly, because the claims are not directed to an abstract idea, Applicants respectfully request that the rejection be withdrawn.

**Claim Rejections under 35 U.S.C. § 112, Second Paragraph**

Claims 1-7, 10, 11, 13-17, 20, 21, 23-27 and 30 are rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 1, 11 and 21, Applicants have amended the claims. The amendments are supported by ¶¶ [0213] of the published application. In view of the claim amendments, Applicants respectfully request that the rejection against claims 1-7, 10, 11, 13-17, 20, 21, 23-27 and 30 be withdrawn.

With respect to claims 5, 15 and 25, Applicants direct the Examiner's attention to ¶ [0234] of the published application, which demonstrates that the interaction function calculating unit "is executed" in order for the reevaluating unit to reevaluate the ligand. With this passage in mind, the phrase "reevaluating unit that causes execution of the interaction function calculating unit" indicates that the reevaluating unit engages the interaction function calculating unit. The phrase is therefore neither vague nor indefinite. Accordingly, Applicants respectfully request that the rejection against claims 5, 15 and 25 be withdrawn.

**Claim Rejections under 35 U.S.C. § 102(a)**

Claims 1, 3-6 and 10 remain rejected under 35 U.S.C. § 102(a) as being anticipated by Hammer *et al. Steroids* (2003) Vol. 68, pages 329-339 ("Hammer"). For the following reasons, Applicants respectfully disagree.

Hammer describes a series of techniques and steps that are used in a molecular dynamic simulation analysis. The reference, however, is silent with respect to a single apparatus comprising different units as claimed. Although the Office Action dated December 21, 2010, states that the instant claims are "not claimed as being a single apparatus," (*see* page 7, last paragraph), the claim language indicates otherwise. Indeed, independent claim 1 recites "A ligand screening apparatus...the apparatus comprising: a post-structural-change

protein coordinate data selecting unit...a spatial point designating unit...an interaction function calculating unit...and a ligand evaluating unit.” The claims are therefore directed to a single ligand screening apparatus comprising four distinct units.

Hammer, however, does not teach four distinct units within one apparatus. The Office Action cites to SURFNET, INSIGHT/DISCOVER, PROCHECK and 3D QSAR software as teaching the claimed units. *See* page 7, second paragraph. Applicants submit that none of the software is described as being part of the same apparatus. Indeed, Hammer is silent to the placement of each software. Accordingly, because Hammer does not teach an apparatus comprising four distinct units as recited in claim 1, Hammer cannot anticipate claim 1, or its corresponding dependents.

Moreover, Hammer does not teach each and every element recited in amended claim 1. Applicants’ apparatus requires the post-structural-change protein coordinate data selecting unit to conduct structural change in the coordinate data of the protein through an induced fit parameter. This change is performed on the protein before the protein and ligand interact through the interaction function calculating unit. The INSIGHT/DISCOVER software of Hammer, however, requires the protein and ligand to first interact and form a complex in order for the software to use induced fitting. *See* page 333, left column, last paragraph. Indeed, Hammer states that “[t]he obtained ligand receptor *complexes* were minimized using the INSIGHT/DISCOVER software.” (emphasis added) *Id.* Accordingly, Hammer fails to disclose, teach or suggest “a post-structural-change protein coordinate data selecting unit that conducts structural change in the coordinate data of the protein,” “a spatial point designating unit that designates a spatial point at which superposition with the ligand is to be conducted from the post-structural-change protein coordinate data selected by the post-structural-change protein coordinate data selecting unit” and “an interaction function calculating unit that calculates an interaction function when the protein and the ligand bind to each other using the spatial point designated by the spatial point designating unit and a ligand coordinate data of the ligand” as claimed in claim 1. Because Hammer does not teach each and every element recited in present claim 1, Hammer’s teachings cannot anticipate claim 1, or its corresponding dependent claims. Thus, claim 1 and claims 3-6 and 10 that depend from claim 1 should be allowed.

**Conclusion**

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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